

Abstract of the Disclosure

Provided is a semiconductor optical device having a current-confined structure. The device includes a first semiconductor layer of a first conductivity type which is formed on a semiconductor substrate and includes one or more material layers, a second semiconductor layer which is formed on the first semiconductor layer and includes one or more material layers, and a third semiconductor layer of a second conductivity type which is formed on the second semiconductor layer and includes one or more material layers. One or more layers among the first semiconductor layer, the second semiconductor, and the third semiconductor layer have a mesa structure. A lateral portion of at least one of the material layers constituting the first semiconductor layer, the second semiconductor layer, and the third semiconductor layer is recessed, and the recess is partially or wholly filled with an oxide layer, a nitride layer or a combination of them. The semiconductor optical device having the current-confined region is mechanically reliable, highly thermally conductive, and commercially preferable and can be used in a wavelength range for optical communications.